THE AIRLINE INDUSTRY'S TRANSITION TO JET AIRCRAFT, 1958-1963: THE FINANCIAL ASPECTS

by

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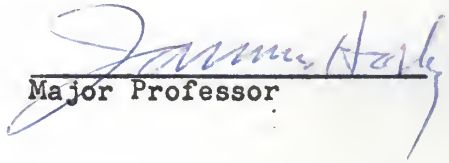

Major Professor

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INTRODUCTION

1963 will take its place in airline history for several reasons. First, 1963 was the airline industry's fiftieth anniversary,[1] and the sixtieth anniversary of powered flight. It was also the year in which the first orders were placed for the commercial supersonic jet transport which will bring about another new era in air transportation in the 1970's. But most significant, 1963 will probably mark the end of the transitional phase from propeller driven aircraft to jet powered aircraft, and the year in which most airline managements emerged successfully from their struggles to solve the economic problems of the jet age.

The jet transitional period was considerably shorter than anticipated by many authorities, including representatives of the transport industry, but the economic problems were acute and the resulting industry recession was serious.[2] The two-fold objective of this report was: (1) to examine the primary economic problems experienced by the American scheduled airline industry during the jet conversion period of 1958 to 1963; and (2) to analyze the financial effects of these problems.

Much information contained in this report was obtained from

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[1]John Durant, "The Airlines at 50," New York Times, Dec. 8, 1963, p. 3. A contract to fly passengers on a scheduled basis was signed by the St. Petersburg-Tampa Airline Co. and the city of St. Petersburg on Dec. 17, 1913. First scheduled flight occurred on Jan. 1, 1914.

[2]"New Transport Equipment," editorial, Aviation Week and Space Technology, July 8, 1963, p. 13.

the literature, primarily periodicals, dealing with the airline industry. Emphasis was placed on selecting material for its wide range of applicability and its credibility. Statistical charts and tables were developed from government and airline industry sources to assist in the examination of the industry's problems, and to provide insight into the significant changes brought about as a result of the conversion to jets. Further information about industry problems was obtained by the author in an interview with the comptroller of Northwest Airlines.

Basically, the approach to the study was to determine: what factors caused the industry recession during the 1958-1963 jet conversion period; what major industry problems developed; and the approximate financial loss to the owners of the airlines involved. Before analyzing the problems encountered, certain background information is presented to provide the reader with a perspective of this rapidly growing industry and its status at the beginning of the jet age.

Segment of the Industry Considered

There are seven classes of operators in the scheduled transport industry of the United States. The classifications are those used by the Civil Aeronautics Board and the Federal Aviation Agency in connection with their Regulation of the industry.[3]

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[3] FAA Statistical Handbook of Aviation 1962, Federal Aviation Agency, Washington: U. S. Government Printing Office, 1963, p. 78.

1. The Domestic Trunk Lines consist of eleven carriers which operate primarily on high-density traffic routes of the United States. The eleven airline firms are:

American Airlines, Inc.
Braniff Airways, Inc.
Continental Air Lines, Inc.
Delta Air Lines, Inc.
Eastern Air Lines, Inc.
National Airlines, Inc.
Northeast Airlines, Inc.
Northwest Airlines, Inc.
Trans World Airlines, Inc.
United Air Lines, Inc.
Western Air Lines, Inc.

2. The International and Territorial Lines include seventeen U. S. flag carriers that are certified to operate between the United States and foreign countries. Nine of these (American, Braniff, Delta, Eastern, National, Northwest, TWA, United, and Western) are primarily domestic trunk airlines listed in classification number one above which have extensions into foreign countries. The other eight are:

Alaska Airlines, Inc.
Caribbean Atlantic Airlines, Inc.
Mackey Airlines, Inc.
Pacific Northern Airlines, Inc.
Pan American World Airways, Inc.
Samoan Airlines, Ltd.
South Pacific Air Lines
Transportation Corporation of America

3. Thirteen Domestic Local Service Lines, sometimes referred to as feeder lines or regional lines, operate between smaller traffic centers and between these centers and the principal centers:

Allegheny Airlines, Inc.
Bonanza Air Lines, Inc.
Central Airlines, Inc.
Frontier Airlines, Inc.
Lake Central Airlines, Inc.
Mohawk Airlines, Inc.
North Central Airlines, Inc.
Ozark Air Lines, Inc.
Pacific Air Lines, Inc.
Piedmont Aviation, Inc.
Southern Airways, Inc.
Trans-Texas Airways, Inc.
West Coast Airlines, Inc.

4. Two Intra-Hawaiian Carriers operate between the islands of the State of Hawaii:

Aloha Airlines, Inc.
Hawaiian Airlines, Inc.

5. Seven Intra-Alaskan Carriers provide scheduled airline service within the State of Alaska:

Alaska Coastal-Ellis Airlines
Cordova Airlines, Inc.
Kodiak Airways, Inc.
Howard J. Mays Airlines
Northern Consolidated Airlines, Inc.
Reeve Aleutian Airways, Inc.
Western Alaska Airlines, Inc.

6. Four Helicopter Carriers operate in New York City, Chicago, Los Angeles, and San Francisco/Oakland.

7. Five All-Cargo Lines operate under temporary certificates authorizing scheduled cargo flights:

Aerovias Sud Americana, Inc.
Airlift International, Inc.
The Flying Tiger Line, Inc.
Seaboard World Airlines, Inc.
The Slick Corporation

With one exception, only Domestic Trunk Lines and carriers having both domestic trunk and international operating certificates (Groups 1 and 2 above) are considered in this paper, because these were the carriers primarily concerned with the transition from propeller-powered planes to jet-powered aircraft. The exception is a major international carrier, Pan American World Airways, Inc. Although it has no domestic operations, Pan American is included in this report because it has a sizable jet-powered fleet, e.g., 64 of the 73 turbojet aircraft listed in Table 1 for International and Territorial Carriers belong to Pan American. Thus the report considered operations of the twelve U. S. scheduled carriers that introduced 402, or 97.8 percent, of the 411 pure jet-powered aircraft in scheduled airline operation as of June 30, 1963. Table 1 shows the number and type of aircraft in scheduled air carrier operations on June 30, 1963.

Table 1. Total aircraft by type of engine in scheduled air carrier operations: June 30, 1963.[4]

Carrier classification	Total turbine and piston	Turbine			Piston
		Total	Turbojet (Pure Jet)	Turboprop (Propeller)	
Domestic Trunk Carriers*	1,095	521	338	183	574
International and Territorial Carriers	156	73	73	--	83
Local Service Carriers	383	38	--	38	345
Intra-Alaska Carriers	53	5	--	5	48
Intra-Hawaii Carriers	18	6	--	6	12
Helicopter Carriers	17	--	--	--	17
All-Cargo Carriers	89	21	--	21	68
Total	1,811	664	411	253	1,147

*Includes air carriers having both domestic and international/territorial operating certificates.

The Industry's General Situation Before the Jet Conversion Period, 1958-1963

Dynamic growth in aviation and air transportation followed the passage of the Civil Aeronautics Act in 1938. In 1938, there were 22 certified route air carriers providing scheduled air transportation over a network of short-hop operations. Sixteen of these 22 carriers formed the nucleus of what is today termed the domestic trunk industry. By 1958, certified air carriers totaled 51 and provided long and medium-haul trunk

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[4]U. S. Civil Air Carrier Fleet, 2nd Quarter 1963, Federal Aviation Agency, Washington, D. C., p. 14.

service in domestic, overseas, and foreign operations; provided local service which connected smaller communities with major traffic centers; provided domestic, overseas, and international all-cargo service; and provided helicopter service in major cities. The growth during those twenty years in the size and complexity of the regulated civil airline industry can be measured partially by data presented in Table 2.

Table 2. Comparison of airline operational data, 1938 and 1958.[5]

	1938	1958	Times increased
Domestic certified route-miles	39,300	254,100	6.5
Foreign and territorial certified route miles	31,100	328,300	10.6
Domestic revenue ton-miles of certified airlines (millions) per year	58	2,656	45.8
Domestic revenue plane-miles flown by certified airlines (millions) per year	76	734	9.7
Scheduled revenue-passenger miles flown (millions) per year	533	29,420	55.2
Passengers (thousands) per year	1,306	50,000	38.3
Average seats per domestic trunk-line aircraft	13.9	56.2	4.0
Number of scheduled aircraft	311	1,758	5.7
Invested air transport industry capital (millions)	$54	$1,307	24.0
Operating revenues per year (millions)	$57	$2,009	35.2

The period between 1938 and the entry of the United States into World War II has been characterized by the term "regulated expansion." For the first time, commercial aviation was guided by a unified national policy and a single federal agency. During

[5]John H. Frederick, Commercial Air Transportation, 5th Edition, p. 91.

the war, the domestic airlines were curbed by lack of equipment; but still they managed to maintain their prewar operating mileage. The average passenger load factor rose from 64 percent in 1941 to a near capacity 91 percent in 1944.[6]

World War II taught the American public that a ready air capability in conflict and in peace was essential. A total of 182,000 military aircraft, including a variety of ocean spanning aircraft, was produced in 1943 and 1944.[7] Air-ground communications, radar, more and better airports, air route systems, and a vast air traffic control system were developed to serve wartime aviation needs. Following the war, the scheduled airlines capitalized on these facilities and aircraft to bring the public safer, faster, more efficient, and more comfortable air travel.

At the close of the war, the airline industry was faced with the need for large-scale operations and the problems of rapid re-equipping and expansion programs. The domestic airfleet was expanded from a total of 378 commercial aircraft in October, 1945, to about 700 aircraft by October, 1946. The domestic trunk industry grew during the postwar adjustment period in spite of operational and re-equipping difficulties; and in 1950, the industry moved into an era of unprecedented financial success. Industry officials were generally optimistic in 1955 and 1956, when the first orders were placed for pure jet-powered aircraft. There was confidence that traffic would continue to

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[6] Ibid., p. 76.

[7] Air Transportation, 1964 Facts and Figures, Air Transport Association of America, p. 7.

grow at the post-World War II annual rate of 10-15 percent.[8] To reinforce this confidence, the certified airlines ordered 230 turbojet aircraft by 1958, most of which were scheduled for delivery by the end of 1960.[9]

The Industry During Jet Conversion

The first turbojet aircraft went into domestic airline passenger service in December, 1958. By 1959 there were six turbojets in operation, 84 by the end of 1960, 202 by 1961, and a total of 319 by the end of 1962.[10] The jet re-equipment program was one of the most extensive modernization programs ever undertaken by a single industry. Direct investment through 1962 for jet equipment exceeded $3 billion by an industry whose investment at the end of 1958 totaled only $1.7 billion. In addition, another one-half billion dollars was invested in maintenance facilities and ground equipment for the jet aircraft.[11]

The industry outlook continued to be optimistic during the first months of the jet transitional period. There was quick passenger acceptance of jets—about 90 percent of the seats were sold. The problem was to find enough jet seats to satisfy the customers' clamor. In 1959, American Airline's Vice President

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[8]Handbook of Airline Statistics, 1962 Edition, Civil Aeronautics Board, Washington: U. S. Government Printing Office, 1963, p. 469.

[9]Frederick, op. cit., p. 92.

[10]FAA Statistical Handbook of Aviation, op. cit., p. 81.

[11]"Civil Aviation," The Aerospace Year Book, 1962, p. 237.

of Sales, Charles A. Rheinstrom, said, "American has underestimated the market and ordered too few jets," although American Airlines had 50 additional Boeing 707's on order for delivery in 1961.[12]

But by 1960 it was obvious that a different situation was developing. Traffic was not increasing at the post-World War II annual rate, and a general decline in earnings set the scene for industrial crisis. Airlines had heavily debt-financed purchase of jets, and as a result, between 1955 and 1960 their borrowed capital increased from 28 percent of total capitalization to over 56 percent.[13] Equity financing to ease the high debt ratio was out of the question because of unattractive earnings. Airline shares lagged far behind the market during the period mid-1955 through late 1957, and again during the period mid-1959 through mid-1962.[14]

The most dismal financial year for the airline industry was 1961, when most members were locked into stiff repayment schedules and excess seating capacity reached a new high. The industry experienced a $34.6 million loss in 1961. The industry passenger load factor dropped from 61.4 percent in 1959, to 56.2 percent in 1961, and to 53.3 percent in 1962.[15] The technology

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[12]"Jet Earns Money Around Clock," Business Week, August 22, 1959, p. 63.

[13]"New Jets Coming and Tougher Financing," Business Week, January 7, 1961, p. 42.

[14]"Airlines Attain Maturity," Financial World, Jan. 1, 1964, p. 83.

[15]Airlines 1964, American Research Council, p. 10.

of jet power and speed revolutionized the hauling capacity of the airlines, and as a result, their available business was diluted to such a degree that all domestic trunk carriers were suffering.

Increased competition led to a flurry of merger proposals. The general feeling was that the industry had reached a turning point--either it must, with Civil Aeronautics Board encouragement and approval, reduce the level of competition through a series of mergers, route adjustments, and suspensions; or face continued poor earnings. After an extended series of hearings, only one merger was approved--the nearly bankrupt Capital Airlines into United Airlines--thereby reducing the number of domestic trunk lines from twelve carriers to eleven.[16]

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[16] American-Eastern Merger Case, Civil Aeronautics Board, Docket 13355, July 12, 1963.

PROBLEMS ENCOUNTERED

The Competitive Environment

Carriers in the airline industry have certain characteristics that influence economic adjustments in the industry. In the opinion of Dr. John H. Frederick, these characteristics are:[17] (1) the industry is "affected with the public interest" similar to other carriers and utilities and, therefore, subject to government regulation; (2) airlines are not "natural monopolies"—strong competition exists and more would exist if governmental policies did not prevent it; and (3) rapid technological progress in flight equipment often makes equipment obsolete long before it is physically worn out.

While the scheduled airline industry has some characteristics of a public utility, it is not monopolistic because of strong competition from (1) other airlines, (2) unpredictable future changes in government regulated route patterns, and (3) other forms of transportation. Dr. Frederick, in his Commercial Air Transportation, listed the major differences between the commercial airline industry and "regulated" industries such as electric, gas, telephone, water, and railroad:[18]

> 1. The airlines operate with a much higher ratio of expenses to revenues, and with a high labor component in relation to revenues and expenses.
>
> 2. The airline industry has a substantial amount of

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[17]Frederick, op. cit., p. 126.

[18]Frederick, op. cit., p. 127.

investment in flying equipment having a relatively short life due to both physical deterioration and obsolescence. This is one of the factors resulting in a net property rate base which, comparatively, is much smaller than that of the ordinary regulated utilities in relation to operating revenues.

3. The airlines are affected to an exceptional degree by continuous technological developments and radical changes in basic operating equipment.

4. Utility services such as electric, gas, water, and telephone are used daily by practically every connected customer. However, airline travel is not in the same constant, essential public use category, and probably will be much more vulnerable to diminished patronage in times of economic stress when consumer decision is involved; the decision to use is not automatic. In the use of air transportation, at least three major decisions are usually involved: Is this trip necessary? Shall I go by air, car, or train? Shall I fly Eastern or National or some other airline?

Competition between carriers was a prime factor in the scramble to procure jet aircraft and enter the jet age. When two or more carriers serve the same markets, neither can afford not to have aircraft equal to or better than competition. Mr. Louis J. Hector, member of the Civil Aeronautics Board, offered the following explanation as to why the airlines rushed into placing orders for jet aircraft:[19]

The airline industry is in many respects different from the usual public utility, and I feel that sound regulation requires careful consideration of its peculiar characteristics. I know of no industry, for instance, where the exact character of the major capital investment is of such critical interest to the ultimate consumer. By and large, people want to ride on the latest and best plane, and it is pretty clear that they will flock to the airline that offers it. This is quite unlike other utilities. The purchaser of electricity cares

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[19]Louis J. Hector, "Problems in Economic Regulation of Civil Aviation in the United States," Journal of Air Law and Commerce, Winter 1959, p. 104.

only about its reliability and price. He is not really interested in whether his electricity is produced by coal, oil, water, or atomic reaction. The purchasers of most commodities do not care in what kind of factory they are made so long as the product is satisfactory. Even the railroad passenger is not too choosy what kind of locomotive pulls the train, provided his particular coach is comfortable. But the airline passenger walks out on the loading ramp, looks over the piece of capital equipment that is to perform his service, then climbs right up inside of it—and he wants the latest and best.

In a very real sense the airlines' major capital investment is the very product they sell the public. A carrier with a plane which does not have public appeal has no alternative in the long run but to get rid of it and buy the type of equipment that the public demands.

Financing the Jets

The airline industry faced major re-equipping programs after World War II, and during the early 1950's, but none as drastic and costly as the transition from propeller driven aircraft to jet-powered aircraft. The cost trend for airliners and related operating equipment increased steadily over the years, as reflected in the approximate prices of airliners over the years:

Table 3. Trend in cost of airliners.[20]

Aircraft	Year introduced	Approximate price per aircraft when introduced
DC-3 (Propeller)	1936	$ 100,000
DC-4 (Propeller)	1945	$ 450,000
DC-6 (Propeller)	1947	$1,000,000
Lockheed Constellation (Propeller)	1951	$1,250,000
DC-7 (Propeller)	1953	$2,000,000
Jet Liner	1958	$6,000,000

[20] CAB Handbook of Airline Statistics, 1962, op. cit., p. 500.

Financing aircraft from the early days of the DC-3 through procurement of the DC-7's and Constellations was accomplished with fairly conventional methods—equity financing and short-term borrowing. Increasing cash flows, consisting of depreciation recoveries and retained earnings, served as downpayment on newer models. But financing the jets soon led to a change in the capital structures of the airlines. Long-term debt represented a major part of the typical capitalization structure in the purchase of jet aircraft. Table 4 (page 15) compares debt as a percentage of total capital in 1956, just before the financing of the jet age got under way, and 1962, when the first round of financing was complete.

Some of the carriers did not take advantage of the opportunity to provide equity financing for their new jets when the market was favorable. As a result, many of the airlines were forced to resort to long-term borrowing to pay for their jets. One such airline was Delta. Delta Vice President, Todd G. Cole, stated, "In 1956 we sold 125,000 shares of common for $4.4 million. At the time we planned to do substantially more equity financing but the bottom dropped out of the market for airline stocks, so we resorted to debt financing to a much greater extent than we preferred."[21] A few turned to leasing jet equipment as a means of reducing the need to raise money. As of October 31, 1962, Boeing Aircraft Company had on lease nine large jets to Northwest, two to Pan American, five to TWA, ten

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[21]"New Jets Coming and Tougher Financing," op. cit., p. 42.

Table 4. Long-term debt as a percentage of total capitalization.*

Carrier	1956[22]	1962[23]
American	20.4%	69.1%
Eastern	35.4	66.9
TWA	48.4	80.2
United	34.5	59.8
Braniff	16.7	48.2
Capital	77.8	**
Continental	59.0	63.3
Delta	30.2	49.8
National	24.1	61.5
Northeast	17.1	78.9
Northwest	31.5	55.7
Western	39.2	52.6
Total Trunk	36.0%	65.6%
Pan American	39.0%	63.7%

*Capitalization = long-term debt, preferred stock, common stock, other paid-in capital, retained earnings, less treasury stock.[24]

**Included in United Airlines figure. Merged with United June 1, 1961.

to Eastern, and General Dynamics Corporation had leased six jets to Northeast.[25] Another financing method was to induce aircraft manufacturers to do part of the financing, either by getting the manufacturers to accept unneeded propeller driven aircraft as trade-ins at good prices, or "by giving purchase money

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[22] CAB Handbook of Airline Statistics, op. cit., pp. 350-365.

[23] "U. S. Airline Assets and Liabilities - Dec. 31, 1962," Aviation Week and Space Technology, April 29, 1963, p. 41.

[24] Paul M. Van Arsdell, Problem Manual in Corporation Finance, p. 11.

[25] "Legal Aspects of Aircraft Financing, Part II," Journal of Air Law and Commerce, Autumn 1963, p. 299.

paper."[26]

Dr. Frederick stresses the serious implications of the airlines' rapid increase in debt in connection with the ability of airlines to face economic fluctuations.[27]

> .....A substantial part of the industry should be able to weather reasonable economic fluctuations as they may occur. If, on the other hand, the financial structure of the industry is such that it endangers continued operations in the face of a general economic decline, it may be properly said that the air transportation system is not soundly financed. The danger in the present amount of long-term or funded debt is that it imposes relatively heavy fixed charges on an industry whose margin of revenue after operating expenses has fluctuated from time to time and, on the average, has been low.

During the jet transition period, the airlines were generally able to meet their heavy interest payments because of substantial cash flows by way of depreciation recoveries (jets were written off in 12-14 years[28]) and retained earnings. Figure 1 reflects the trend of cash flow and interest on long-term debt for the domestic trunks for the period 1957-1963.

Excess Capacity

"Too many seats and too few passengers" was an oft-stated phrase to describe the source of the airlines' woes during the conversion to jets. Excess capacity was not the sole reason,

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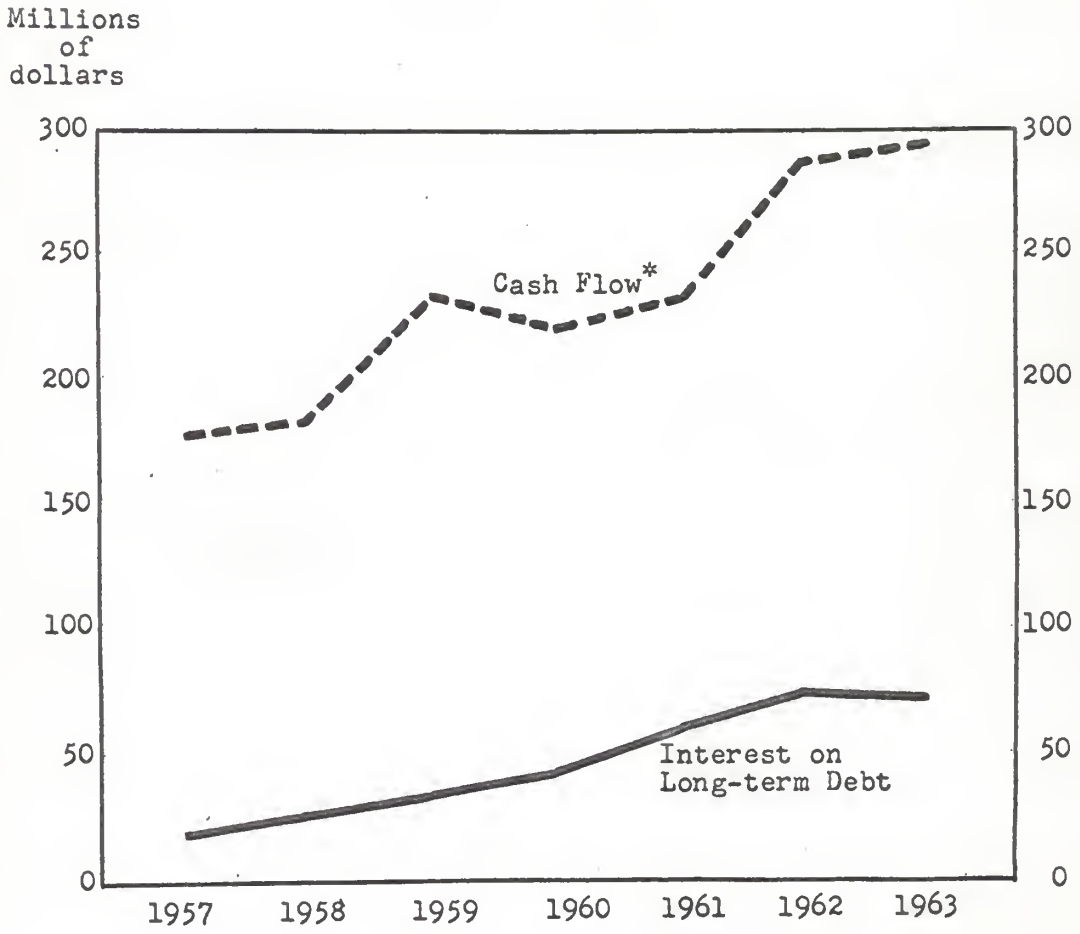
[26]"New Jets Coming and Tougher Financing," op. cit., p. 42.

[27]Frederick, op. cit., p. 332.

[28]National and TWA in their 1962 annual reports and American in its 1963 annual report state that accelerated methods of depreciation are used for federal income tax purposes while the straight-line method is used for accounting purposes.



	1957	1958	1959	1960	1961	1962	1963
Cash flow	$175	$184	$233	$217	$232	$290	$295
Interest on long-term debt	$ 16	$ 24	$ 32	$ 44	$ 62	$ 72	$ 69

*Cash Flow = depreciation recoveries plus retained earnings.

Fig. 1. Trend of cash flow and interest on long-term debt for the domestic trunks, 1957-1963.[29]

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[29] Air Transportation, op. cit., p. 24.

but it was a major contributor. Periodically, trunk airlines went through cycles of buying new aircraft that created serious financial problems for many of them. Yet each time, traffic expanded and most of them emerged successfully.[30] There were two major re-equipping phases prior to the jet age: 1945-1946, to rebuild the civil airline fleets; and in the early 1950's, to obtain bigger propeller aircraft. But, the jet re-equipping phase in 1958 developed into a more severe crisis. The Civil Aeronautics Board commented on the industry's condition during a merger hearing:[31]

> The air carriers' problems are not simple, and no single cause or easy remedy of profit decline is apparent. It is obvious that it stems in large part from the fact that the industry entered into a vast jet-purchase program in the late fifties which was geared to an anticipated growth in traffic that did not develop.

Table 5 compares carriers' traffic estimates (revenue passenger miles) with actual traffic carried. Note that in 1961 traffic was 25 percent less than projected.

Some factors that contributed to overcapacity were: (1) the failure of traffic to develop, and (2) the fact that the first jet aircraft were so big capacity-wise that (3) it was difficult in many markets to operate frequent schedules without exceeding the market's need. Table 6 indicates the tremendous increase in daily seat-mile productive capacity of jet aircraft over selected previous aircraft.

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[30]"Too Many Seats in the Sky," Business Week, April 23, 1960, p. 78.

[31]American-Eastern Merger Case, op. cit., p. 30.

Table 5. Comparison of actual 1959-1961 passenger-miles with forecasts submitted by the carriers.[32]

Scheduled domestic operations	(Miles in millions) 1959 Forecast	1959 Actual	1959 % Diff.**	1960 Forecast	1960 Actual	1960 % Diff.**	1961 Forecast	1961 Actual	1961 % Diff.**
American	6,360	5,737	(9.8)%	6,900	6,405	(7.2)%	7,750	6,395	(17.5)%
Braniff	1,075	935	(13.1)	1,185	1,053	(11.2)	1,314	1,056	(19.6)
Capital	1,619	1,611	(0.5)	1,498	1,492	(0.4)	*	*	
Continental	633	673	6.3	733	886	20.8	761	899	18.1
Delta	1,740	1,619	(7.0)	2,022	1,879	(7.1)	2,325	2,189	(5.8)
Eastern	5,371	4,446	(17.2)	6,069	4,053	(33.2)	6,710	4,007	(40.3)
National	1,504	1,169	(22.3)	2,052	1,074	(47.7)	3,051	1,139	(62.7)
Northeast	856	519	(39.4)	872	565	(35.2)	1,297	751	(42.1)
Northwest	1,260	1,384	9.9	1,400	1,337	(4.5)	1,532	1,020	(33.4)
TWA	4,682	4,579	(2.2)	5,145	4,451	(13.5)	5,557	4,248	(23.6)
United	5,481	5,109	(6.8)	6,270	5,759	(8.1)	6,925	7,974	(10.8)
Capital*	-	-	-	-	-	-	2,019		
Western	985	896	(9.0)	1,104	944	(14.5)	1,238	862	(30.4)
Total	31,566	28,677	(9.2)%	35,250	29,898	(15.2)%	40,479	30,540	(24.6)%

*Consolidated with United in 1961.

**Figures in brackets are percentages below forecasts. Figures without brackets indicate percentages of passenger-miles above forecasts.

[32] American-Eastern Merger Case, op. cit., Appendix 7.

Table 6. Increase in daily seat-mile productive capacity of jets over previous aircraft.[33]

Aircraft type	No. of seats	Average speed	Available seat-miles per hour	Available seat-miles per 10-hour day
Boeing 707-320 (jet)	126	494	62,244	622,440
Boeing 707-120B (jet)	118	502	59,236	592,360
Lockheed Electra (Turboprop)	72	288	20,736	207,360
Viscount (Turboprop)	52	261	13,572	135,720
DC-7 (Propeller)	74	271	20,054	200,540
Constellation (Propeller)	70	243	17,010	170,100
DC-6 B (Propeller)	68	225	15,300	153,000
DC-4 (Propeller)	54	163	8,802	88,020
DC-3 (Propeller)	22	145	3,190	31,900

The pause in airline passenger traffic growth between 1959 and 1962 occurred at a time when airline capacity was growing most rapidly (refer to Fig. 2 and Table 7.).

At the same time, hours-per-day use of aircraft, as reflected in Table 8, was decreasing. This poorer utilization rate of flight equipment further indicated the extent to which equipment capacity exceeded the traffic available at the time.

The industry passenger load factor—the percentage of the available seat miles actually sold—continued a downward trend as the passenger carrying capacity of the airlines increased.

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[33] American-Eastern Merger Case, op. cit., Appendix 4.

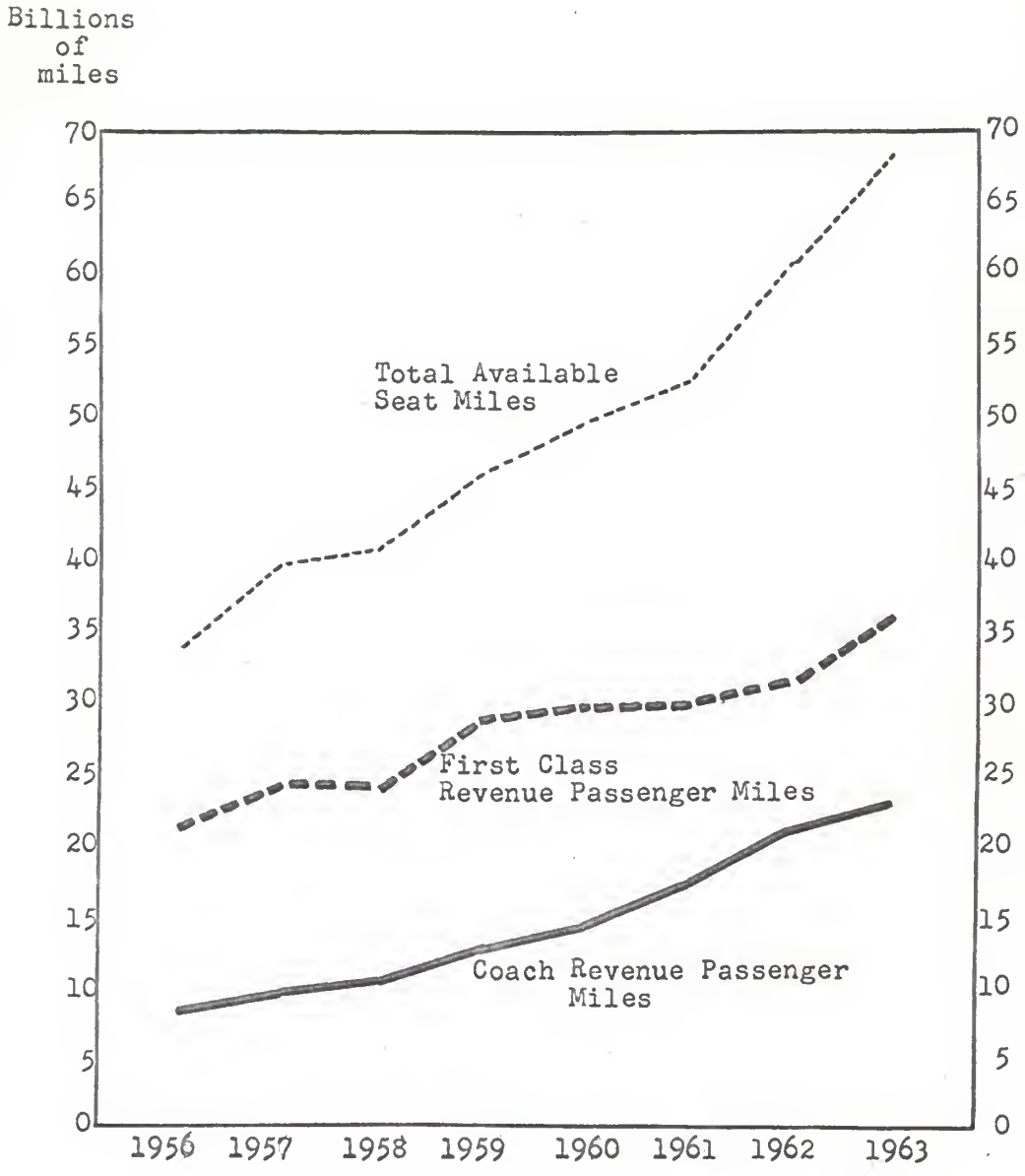

Fig. 2. Trend of total available seat-miles and revenue passenger miles by class of service, domestic trunk lines, 1956-1963.[34]

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[34]L. L. Doty, "Trunk Lines Face Management Transition," Aviation Week and Space Technology, March 16, 1964, p. 161.

Table 7. Trend in total revenue passenger miles by class of service, domestic trunk lines, 1956-1963.[35]

	(Miles in millions)							
	1956	1957	1958	1959	1960	1961	1962	1963
First class revenue passenger miles	13,577	15,012	14,391	15,853	14,845	12,454	10,956	12,000
Coach revenue passenger miles	8,066	9,487	10,045	12,274	14,387	17,081	20,873	23,965
Total first class and coach passenger revenue miles	21,643	24,450	24,436	28,127	29,233	29,535	31,829	35,965
Coach as a percent of total passenger revenue miles	37.3	38.7	41.1	43.6	49.2	57.8	65.6	66.7

[35] Doty, March 16, 1964, op. cit., p. 161.

Table 8. Revenue hours per aircraft per day in domestic and nonscheduled operations of the domestic trunk carriers, 1955-1961.[36]

Calendar year	Aircraft days assigned	Aircraft revenue hours flown	Revenue hours per aircraft per day
1955	335,018	2,565,664	7:39
1956	354,963	2,787,603	7:51
1957	395,004	3,118,581	7:54
1958	402,017	3,008,434	7:29
1959	422,889	3,115,793	7:22
1960	430,051	2,795,575	6:30
1961	403,678	2,396,907	5:56

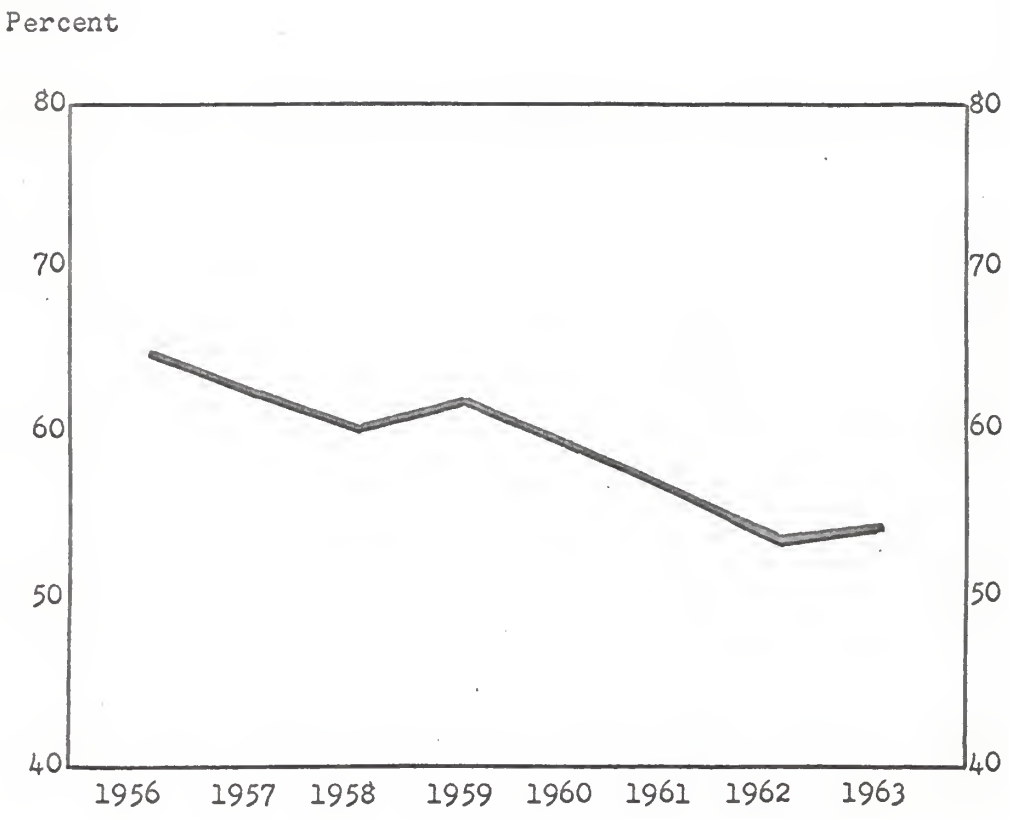
A comparison of load factors by airline for the years 1961, 1962, and 1963 is shown in Table 9, and the industry load factor trend is shown in Fig. 3.

Table 9. Trends in individual carrier passenger load factors, 1961-1963.[37]

Carrier	1961	1962	1963
American	62%	57%	59%
Eastern	50	48	50
TWA	57	51	53
United	57	53	53
Braniff	58	54	54
Continental	48	46	51
Delta	60	61	61
National	55	54	52
Northeast	50	53	50
Northwest	54	52	51
Western	55	53	54
Trunk Total	56.2%	53.3%	53.9%
Pan American	59%	58%	57.2%

[36] American-Eastern Merger Case, op. cit., Appendix 42.

[37] Aviation Week and Space Technology, April 29, 1963, p. 41, and March 16, 1964.



Passenger load factor %	64.1	61.5	60.0	61.4	59.5	56.2	53.3	53.9

Fig. 3. Passenger load factor trend of the domestic trunklines, 1956-1963.[38]

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[38] CAB Handbook of Airline Statistics, 1962, and Aviation Week & Space Technology, March 16, 1964, p. 164.

Depressed Earnings

The upward surge in passenger traffic in 1963, and a reversal of the downward trend in the load factor helped to break the industry recession which had depressed profit margins for the previous five years. The recovery did not come, as in the past, through bettering the load factor, but rather it appears to have been brought about by reducing operating costs and learning to operate with the lower load factors.

Airline revenues gained steadily during the jet transition, as indicated in Table 10, but poor earnings made it difficult to raise equity financing to ease the high debt ratio.

Table 10. Trends in revenues, operating ratios, and profit margins on sales, domestic trunk airlines, 1955-1962.[39]

Year	Total operating revenues	Total operating expenses	Operating ratio (%)	Net profit or (loss)	Profit margin on sales (%)
		($000 omitted)			
1955	$1,132,234	$1,009,615	89.2%	$62,984	5.6%
1956	1,262,832	1,162,230	92.0	57,852	4.6
1957	1,419,615	1,377,521	97.0	27,028	1.9
1958	1,513,250	1,418,125	93.7	44,794	3.0
1959	1,798,610	1,693,374	94.1	61,682	3.4
1960	1,942,635	1,907,785	98.2	68	---
1961	2,026,368	2,033,937	100.4	(34,567)	---
1962	2,250,281	2,174,137	96.6	11,288	0.5

In air transportation, an operating ratio of 90 percent or higher was normal for the jet transition period.[40] The extremely

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[39] Air Transportation 1963, op. cit., p. 26.

[40] Frederick, op. cit., p. 332.

high ratios increased the sensitivity of the industry to changes in volume of traffic. Further, the industry incurred a large proportion of expenses which did not vary directly with the volume of business. Thus, the airlines had a high break-even point.

A primary reason the industry was able to develop a break-even load factor below the industry load factor was due to the reduced operating cost of the jet-powered aircraft. In 1962 and 1963, as in 1960 and 1961, the unit direct operating costs (maintenance, fuel, flight crew, and depreciation) of the four-engine jets were significantly lower than those of either piston-engine or turboprop aircraft (refer to Table 11).

Table 11. Operating costs per seat mile, 1961-1963.[41]

Type of aircraft	1961	1962	1963
Jet	1.75 cents	1.64 cents	1.50 cents
Turboprop	2.43 cents	2.35 cents	2.36 cents
Propeller	2.48 cents	2.75 cents	2.61 cents

The greater economic efficiency of the jets was evident also in the 1962 ton-mile costs. Trunk airline jets averaged direct operating cost per available ton-mile of 12.15 cents. The costs for turboprop and four-engine piston aircraft in passenger service were 19.22 cents and 21.85 cents, respectively.[42] However,

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[41]"Direct Operating Costs of Transport Aircraft in Airline Service 1962," Federal Aviation Agency, August, 1963, p. 4, and "Direct Operating Costs and Other Performance Characteristics of Transport Aircraft in Airline Service 1963," FAA, July, 1964, p. 5.

[42]Ibid., 1963, p. 4.

there was considerable variation in unit costs of the aircraft types within each category, and to a certain extent the figures reflected the shorter trip distances of the turboprop and piston aircraft.

The industry continued to have low rates of return on investment throughout the transitional period (reference Table 12). In November, 1960, the CAB announced that domestic airlines should earn an average return of 10½ percent on invested capital (defined as stockholder equity plus long-term debt).[43] More specifically, the Big Four (United, American, Eastern, and TWA) should earn 10¼ percent, with the other seven trunks earning 11 1/8 percent. From 1950 to 1955, the industry earned returns on invested capital of 10-15 percent; but by 1956, heavy equipment expenditures started a downward trend of rate of return on invested capital for the individual airlines as shown in Table 12.

The Editors of Forbes applied their statistical yardsticks to 246 companies and 16 major industries to test them for growth and profitability during 1962. In the category of growth, the airline industry was rated number one—the fastest growing industry since 1957. The industry medians for sales were 12.5 percent, and earnings of 6.8 percent. In the category of profitability, the airline industry was rated number five. Medians were: return on equity, 5.9 percent; cash flow to equity, 30.6 percent; and operating profit margin, 16.4 percent.[44]

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[43] The Aerospace Year Book, op. cit., p. 237.

[44] "Management Performance," Forbes, January 1, 1964, p. 18.

Table 12. Rate of return on investment* of the domestic trunklines and Pan American systems operations, 1955-1962.[45]

Carrier	1955	1956	1957	1958	1959	1960	1961	1962
American	13.93%	13.50%	6.91%	9.25%	9.45%	5.72%	4.79%	5.35%
Eastern	13.49	12.49	9.82	5.40	6.62	0.91	0.51	(2.61)
Trans World	7.01	(0.40)	0.86	1.08	7.62	4.24	0.65	1.61
United	8.97	10.59	5.55	8.25	7.52	5.78	3.14	3.54
Braniff	8.09	7.40	5.50	7.73	6.15	3.73	2.42	8.19
Capital	22.09	1.39	1.35	4.64	2.15	(31.62)	**	**
Continental	6.47	8.95	3.54	4.21	8.19	7.89	6.21	7.17
Delta	10.42	11.30	5.19	7.04	5.80	5.34	6.91	16.03
National	12.94	15.60	3.87	4.17	1.19	(3.56)	(4.43)	14.17
Northeast	7.37	(3.00)	(25.43)	(13.38)	(23.63)	(44.02)	(49.12)	(75.91)
Northwest	7.13	8.78	10.14	10.17	9.00	4.32	5.32	6.30
Western	14.74	16.94	10.79	6.64	14.03	6.96	3.25	9.21
Total Trunk	11.00%	9.20%	5.22%	6.01%	6.95%	3.25%	2.31%	4.10%
Pan American	5.75%	7.66%	6.52%	3.13%	3.78%	4.65%	5.33%	7.26%

**Merged with United.
*Investment = Stockholder equity plus long-term debt.
Brackets indicate losses.

[45] American-Eastern Merger Case, op. cit., Appendix 11, for 1955-1961 data. CAB Handbook of Airline Statistics, 1963 Edition, pp. 242-309, for 1962 data.

Increased Competition

While jets offered greater passenger capacity, traffic (measured in terms of revenue passenger miles) increased only 4.1 percent in 1960, and 1.1 percent in 1961, as compared to the historical post-World War II growth pattern of 10-15 percent per year (reference Fig. 3). A wave of pessimism swept over the domestic trunk airline industry. Several major airlines initiated merger proposals to eliminate what they considered to be excessive competition. Those most actively engaged in the merger movement were United and Capital, American and Eastern, and Pan American and TWA.

Commenting on the trunklines' route structure, Mr. C. R. Smith, President of American Airlines, stated,[46]

> To the basic pattern has been added route after route, often in piecemeal fashion. It is quite obvious that the paralleling of duplicating services on some of the routes has been overdone. The net result is that the total of traffic is insufficient to provide a reasonable economic opportunity for all carriers operating there.

Talk of mergers among the trunks was supported not only by many airline officials, but by their government counterparts. These observers contemplated a series of mergers that would produce five or six surviving trunk lines.[47] Airline officials

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[46]"Regulation by Due Process," Business Week, October 8, 1960, p. 54.

[47]Richard J. Barber, "Airline Mergers, Monopoly, and the CAB," Journal of Air Law and Commerce, Winter 1961-62, p. 189.

received particular encouragement from the Civil Aeronautics Board Chairman, Alan Boyd, a few months after the United-Capital merger was approved.[48]

> I hope that others of the eleven domestic trunk lines now in existence will merge in the future....Time may be running out for some carriers to receive what they and their investors consider to be a fair price for merging into other companies.
>
> It is altogether possible that financial conditions in the industry may become worse before they become better than they are now.

Mr. Boyd's statement was in line with the Administration's aviation policy spelled out in 1954 by the President's Air Coordinating Committee:[49]

> Plans should be developed for consolidation of trunklines into a more limited number of systems, capable of self-sufficient operation while carrying their fair share of uneconomical and developmental service.
>
> The present trunkline route pattern is highly competitive. While it is important to have enough competition to assure the aggressive promotion of service needed by the public, there is a point of diminishing returns beyond which competition can be self-defeating. Healthy, financially independent carriers can provide the public with better service—and more effective competition—than a larger number of marginal carriers.

Several mergers (reference Table 13) involving domestic trunk airlines were consummated just prior to the start of the jet age. But, in the opinion of Dr. Frederick, the CAB's merger policy was only partially successful.[50]

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[48] New York Times, November 4, 1961, p. 46.

[49] Civil Air Policy, The Air Coordinating Committee, May, 1954, U. S. Government Printing Office, p. 13.

[50] Frederick, op. cit., p. 196.

> The power to approve mergers has not been used as an affirmative weapon of Board policy, perhaps because of the Board's belief that the most effective method of overcoming the difference in size of carriers was through the award of new route certificates.

Table 13. Mergers and acquisitions involving domestic trunk airlines: 1952-1960.[51]

Effective date	Surviving airline	Absorbed airline
April 10, 1952	Western	Inland Air Lines, Inc.
August 16, 1952	Braniff	Mid-Continent Airlines, Inc.
May 1, 1953	Delta	Chicago and Southern Airlines, Inc.
April 1, 1955	Continental	Pioneer Air Lines, Inc.
June 1, 1956	Eastern	Colonial Airlines, Inc.

Beginning with the New York-Chicago route certificate case (decided in September, 1955), the CAB awarded route extensions "that broadened the route systems of all of the domestic trunk-line carriers to a greater or lesser extent. In many of these route awards, selected carriers were authorized to operate over routes already served by other carriers."[52] As a result of the Board's route policy, too many systems may have been created. By 1962, there were eight major lines flying between New York and Washington; five between New York and Boston; four between New York and Chicago; and four between New York and Detroit.[53]

The CAB is specifically directed by Section 408 (b) of the Federal Aviation Act of 1958 to approve proposed mergers when

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[51] CAB Handbook of Airline Statistics, 1962, op. cit., p. 515.

[52] Samuel B. Richmond, "Creating Competition Among Airlines," Journal of Air Law and Commerce, Autumn 1957, p. 435.

[53] Airlines 1964, op. cit., p. 16.

not inconsistent with the public interest.[54] During the jet conversion period, the only merger approved and consummated by the CAB was Capital Airlines into United. Capital Airlines may have been in a distinct category because of its bankrupt condition. Prior to its merger with United, Capital was the fifth largest domestic airline. After profitable operations from 1947 to 1955, the airline suffered severe losses, and by mid-1960 its net worth was $3.7 million as compared with a 1955 value of $17.1 million.[55] In March, 1960, Capital was faced with the possibility of foreclosure by Vickers-Armstrong Aircraft, Limited, to which secured promissory notes in excess of $10 million were due. Capital filed a request with the CAB for subsidy assistance at the rate of $13 million annually. The Board declined. Then a proposal was filed to merge Capital into United and to transfer Capital's route certificates to United. This was approved.[56]

There is no "typical" domestic trunk airline. Route assignments alone create vast differences between the airlines. Two airlines having the same characteristics of size, volume of traffic, and operations, but having a different number of stations, will experience different cost levels and perhaps use different types of aircraft. The nature of many airline routes

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[54] Federal Aviation Act of 1958, Section 408 (b), p. 43.

[55] CAB Handbook of Airline Statistics 1962, op. cit., p. 355.

[56] "Merger and Monopoly in Domestic Aviation," Columbia Law Review, May, 1962, p. 851.

is seasonal due to weather, which again creates differences in costs. But the major difference is size. Four of the domestic trunks control over 70 percent of the passenger traffic, as reflected in Table 14.

Table 14. Domestic trunk carrier participation in revenue passenger miles scheduled services: 1955-1961.[57]

Carrier	Percent of total		
	1955	1959	1961
Big Four			
American	22.2%	20.0%	20.0%
Eastern	17.4	15.7	13.6
TWA	14.9	16.3	14.4
United	19.6	17.2	25.3
Total Big Four	74.1%	69.2%	73.3%
Other Trunks			
Braniff	3.1%	3.3%	3.6%
Capital	4.1	5.7	---
Continental	1.2	2.4	3.0
Delta	5.0	5.5	7.4
National	4.4	3.9	3.8
Northeast	0.6	1.9	2.5
Northwest	4.3	4.9	3.5
Western	2.7	3.2	2.9
Others	0.5	---	---
Total Other Trunks	25.9%	30.8%	26.7%

American and Eastern made their bid for merger approval in 1961, contending that:[58]

> (1) the present state of the airline industry calls for immediate steps to restore its health, (2) mergers are the only realistic remedy for the airlines' ills,

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[57] American-Eastern Merger Case, op. cit., Appendix 37.

[58] American-Eastern Merger Case, op. cit., p. 3.

> (3) the American-Eastern merger is an eminently logical one, (4) the American-Eastern merger will benefit the industry generally and will not adversely affect other carriers, (5) the governing law requires approval of the merger, (6) only the customary labor-protective provisions and the route restrictions to which the applicants have agreed should be made conditions of approval, (7) the intrinsic nature of their route structures preclude sound economic conditions, (8) the merger will enable expense savings of $50 million annually and capital savings of $100 million, (9) employment security and opportunity will be enhanced by the merger, and (10) the merger will assure stronger competition rather than create monopoly.

Several factions urged CAB denial of approval for the American and Eastern merger. Among them were all of the other domestic trunkline carriers (except Western), several local-service carriers, organizations representing a major part of the employees of the two applicants, and interested cities whose existing service might be affected.[59]

One observer of the merger movement in 1961 expressed his feelings as follows:[60]

> What is distressingly unclear, however, is the need and desirability of the various consolidations contemplated. Perhaps they will have private advantages..... to the extent they do, there is likely to be serious public detriment. Competition will be reduced and the imbalance that prevails in the industry—with four carriers now accounting for over 70 percent of the passenger traffic, the remainder divided among seven other participants—is perpetuated, if not actually emphasized.

Following is a summary of the findings of the CAB in the American-Eastern Merger Case, and its reasons for disapproving the merger:[61]

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[59] American-Eastern Merger Case, op. cit., p. 4.

[60] Barber, op. cit., p. 189.

[61] American-Eastern Merger Case, op. cit., p. viii.

1. The merger would result in creating a monopoly in the high-density traffic markets in the northeastern area of the United States.

2. The merger would not be consistent with the public interest.

3. The decline of profits of the trunkline air carriers has not been established as caused primarily by excessive competition.

4. The merger would result in a concentration of resources and power in the merged carrier which would enable it to dominate trunkline air transportation in the United States and would make impossible the continuation of the Board's policy of maintaining competition between the Big Four carriers and between the Big Four and the other air carriers.

5. The merger is not required as a business necessity. American has led the industry in load factors and stood above average in rate of return on investment (reference Tables 9 and 12). Eastern's difficulties are temporary in nature and are due to its delay in acquiring jets, uneconomic scheduling of flights, and unfavorable publicity due to Electra Aircraft accidents.

The merger attempts came at the low point in the jet conversion recession of 1961. The industry was losing $34.6 millions, and although the CAB officially encouraged mergers initially, the airlines were not able to come up with the merger formulas that won official approval. The industry steadfastly insisted that declining profits were due primarily

to excessive competition. The CAB, just as firmly, insisted that excess capacity, rather than excess routes, was to blame for the decline in profits.[62]

A Confusing Passenger Fare Schedule

Increased competition between the trunkline carriers led to another jet age problem which is often referred to as the "domestic fare chaos."[63] This problem caused confusion and fumbling within the industry, as well as out where it affected the passenger. One observer noted that the tariff structure "has become so muddled that it now pays a passenger to shop airline ticket offices for bargain rates."[64] A New York airline ticket agent claimed that 123 different possibilities in price were available to a family of four flying between New York City and Miami.[65] The ticket buyer has to consider the various costs of day fares, night fares, jet fares, piston fares, first-class fares, and a lot more.

Airlines were quite restricted in their choice of jet aircraft—not by government controls—but by types of aircraft to choose from. The result was that each airline operated equip-

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[62]"Setback for Airline Mergers," Business Week, December 1, 1962, p. 31.

[63]"Boyd Warns of Sterner CAB Fare Policy," Aviation Week and Space Technology, January 27, 1964, p. 42.

[64]L. L. Doty, "CAB Seeks to End Domestic Fare Chaos," Aviation Week and Space Technology, January 13, 1964, p. 34.

[65]James H. Winchester, "How Fair is Air Fare?" Flying, October, 1963, p. 34.

ment quite similar to his competitor's, at approximately the same speed, and for approximately the same cost. This situation left little room for management to maneuver. As competition between airlines increased (or was permitted to increase), there was a marked trend toward product differentiation. Product differentiation took various forms, including differences in scheduling and in-flight and ground services. Price competition and service competition were inseparably intertwined to create the passenger fare problem.

In 1958, domestic trunk airlines found re-equipment programs still not completely financed, traffic growth slowing, declining passenger load-factors, and rapidly shrinking profits. The remedy first proposed by almost all the carriers was that a substantial increase in the level of fares be authorized.[66] In a series of decisions in 1958, the CAB permitted fare increases and reductions or eliminations of discounts. These actions produced an overall fare increase in excess of 10 percent for the industry.[67] The rates continued to rise sharply through 1962. During the four year period 1959-1962, the average rate collected per passenger mile was up 21 percent over the 1958 rate. (The consumer price index during the same period increased 3.4 percent.) Table 15 illustrates these increases in fare.

One result of these increases was the switch by growing numbers of travelers from higher-priced first-class seats to

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[66] Hector, op. cit., p. 102.

[67] CAB Handbook of Airline Statistics 1963, op. cit., p. 482.

Table 15. Illustrative fare increases: 1954-1962.[68]

Month/year	(One-way fares, tax excluded)			
	New York-Los Angeles		New York-Chicago	
	First class	Coach	First class	Coach
July 1954	$158.85	$ 99.00	$ 45.10	$ 33.00
July 1957	158.85	99.00	45.10	33.00
July 1958	166.25	104.00	47.95	35.35
July 1959	166.25	104.00	47.95	35.35
Add for Jet	10.00	10.00	3.00	3.00
July 1960	171.45	109.15	50.15	38.30
Add for Jet	10.00	10.00	3.00	3.00
July 1961	171.45	109.15	50.15	38.30
Add for Jet	10.00	10.00	3.00	3.00
July 1962	176.60	112.45	51.70	39.45
Add for Jet	10.00	32.65	3.05	3.25

lower-priced coach seats on the same planes (reference Fig. 2 and Table 7). Coach traffic, as a percentage of revenue passenger miles, increased from 41.1 percent in 1958 to 66.7 percent in 1963. Coach and other special fares had been offered by the airlines for many years, but the jets led to two-class service and multiple rates in $6 million aircraft with cabins divided into first-class and coach compartments. The price gap between first-class and coach fares brought about a rapid decline in first-class passenger load factors and an equally rapid increase in coach load factors.

What is the difference between these two services? Both

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[68] Barber, op. cit., p. 198.

classes of passengers depart and arrive at the same time, but there the similarity ends. The coach fare is usually about 25 percent lower than first-class. For coach, there may be no seat reservations and the waiting lines at loading gates are usually longer than waiting lines for first-class seats. Using Eastern Airline's DC-8 jet flight between New York and Miami as an example, some of the differences can be noted.[69] In the coach compartment of the 63-foot long, 11½-foot wide cabin, there are 102 seats, arranged three-abreast on either side with a 16-inch aisle down the center. The coach seats are 17 inches wide with 33 inches between rows. By contrast, first-class seats number 28 and are arranged two seats on each side of a 22-inch aisle. The seats are 22 inches wide with 40 inches between rows. Further, the first-class seats are located forward of the jet's engines in a relatively quiet area. The physical differences between the two classes primarily involve spaciousness and comfort, but they extend to food and other air and ground services too. On this Eastern flight, two stewardesses were assigned to the 102 seat coach section, while two stewardesses served the 28-seat first-class compartment. On the ground, Eastern provided separate waiting rooms with more "free" extras for the first-class passenger.

That the majority of the airlines' customers did not think first-class service worth the extra cost was evident in the increasing percentage of coach revenue miles (reference Table 7).

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[69] Flying, op. cit., p. 105.

However, the increasing trend of coach traffic was held to a 1.1 percent gain over first-class traffic in 1963, as compared to gains of 5.6 percent, 8.6 percent, and 7.8 percent in 1960, 1961, and 1962, respectively. Credit for this significant increase in first-class passenger traffic without draining traffic away from coach traffic is given primarily to the introduction of the first-class family plan discount. Under the plan a passenger holding a first-class ticket could take his wife and members of his family at half fare. The combined cost was less than the cost of an equal number of coach seats.[70]

Numerous other promotional fare schemes were introduced by airlines in an effort to hold their present share of the market and gain new customers. Some of the main ideas were: (1) single-class service used by United with a price set between the first-class and coach fares of other airlines; (2) three-class service used by TWA and Continental which includes a "standard" class priced between first-class and coach—similar in price to United's single-class; and (3) reduced rates to military personnel traveling on leave. All such special-rate traffic resulted in a lower yield per seat. If such traffic filled seats that would otherwise be empty, the airline gained; but if regular traffic took advantage of lower fares, airline revenues were depressed. Mr. L. L. Doty, Transport Editor of Aviation Week and Space Technology, states the airlines' rate war "raises

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[70]"Family Fare Plan Producing Shift to First Class as Traffic Climbs," Aviation Week and Space Technology, August 19, 1963, p. 39.

an old question that has never been properly answered: Will lower fares open up enough new markets to offset a drop in revenue yield per passenger?"[71]

If the answer is negative, this would indicate a basic weakness in airline management—lack of a pricing technique, a major factor in any business. CAB chairman, Alan S. Boyd, speaking to an audience of airline officials and others associated with the industry in January, 1964, stated that it was time for both his organization and the airline industry "to work out some kind of fare policy or philosophy." He admitted that the CAB had no fare policy and added, "I don't think any of the airlines have a fare policy, either." A United Air Lines official at the meeting commented, "I think the airlines have individual fare policies, but there is no policy for the industry as a whole."[72] Mr. Doty commented on the industry's fare policy as follows:[73]

> Widespread differences in operating and promotional philosophies within the industry have prevented any single position in formulating a basic fare structure. As a result, fares are now being used as competitive tools and some carriers are forced to adopt fares they bitterly oppose in order to compete effectively.
>
> Consequently, tariffs are without uniformity and have degenerated into a complex structure that turns what should be a simple task of preparing a ticket into a complicated mathematics problem for ticket agents. Tariff revisions involved in the American (Air Lines) fare adjustments require 35 pages and include more than 300 separate provisions and restrictions affecting new rates.

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[71]Doty, op. cit., p. 34.

[72]"Boyd Warns of Sterner CAB Fare Policy," op. cit., pp. 42-43.

[73]Doty, op. cit., p. 34.

Another opinion of the industry's price policies and related actions is expressed below.[74]

> Fares and their application to seating configuration have been the center of a competitive roustabout which has created a merchandising performance about as subtle as a gasoline station price war. Lack of thoughtful pricing tactics has caused confusion for the passenger that is compounded by advertising programs devoted to explaining why he should or should not like first-class service—or any of the other varieties offered.
>
> During the fracas, the CAB has stood aside without using its regulatory powers so that airlines, which have historically pleaded with the Board for the right to use their managerial prerogatives, have been left to act freely and have only themselves to blame for the rates and fare dilemma.

An indication of the intensity of the rate war is reflected in the results of an analysis of airline advertising themes by Printers' Ink. Their survey of non-business travelers showed that "speed" and "comfort" are the main associations of air travel. Yet, the analysis "of more than 1000 airline advertisements showed that highly competitive copy themes prevail in almost three-fourths of the ads," and that "the positive association of speed and comfort did not show to any extent as dominant themes in the analysis of copy content."[75]

At the beginning of the jet age the airlines united in a struggle to raise fares. When the passenger traffic growth rate resumed its climb in 1963, several (though not all) airlines started moving in the opposite direction by forcing passenger

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[74] Doty, March 16, 1964, op. cit., p. 161.

[75] "Do Airlines Ignore the Ripest Market?" Printers' Ink, March, 1964, p. 7.

rates down. Most of the special fares had the effect of reducing the cost of air transportation to the traveler.[76]

Other Significant Problems

The problems outlined were by no means the only problems faced by the airline industry during the jet conversion period. Two other significant problems were: (1) the unusual series of service interruptions due to labor disputes, and (2) a soft market for disposal of unneeded used piston aircraft.[77]

During the period 1958 through 1962, all trunklines except three (Delta, Northeast, and United) were involved in a total of 23 management-labor disputes. Each conflict lasted for an average of 24.7 days. Seventeen, or 74 percent, of the conflicts resulted in suspension or interruption of flight schedules.[78]

Second, as the large capacity jets came into operation, the airlines faced the problem of disposing of 850 surplus piston-type aircraft that were still in excellent condition. The planes had cost about $830 million and had a book value of $250 million at the time of disposal.[79]

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[76]Doty, January 13, 1964, op. cit., p. 134.

[77]American-Eastern Merger Case, op. cit., p. 31.

[78]CAB Handbook of Airline Statistics 1963, op. cit., p. 512.

[79]Frederick, op. cit., p. 34.

SUMMARY

The problems outlined in this paper, namely paying for the jets, excessive capacity, reduced income, increased competition, and a confusing fare schedule were the major problems faced by the domestic trunk airlines during the jet conversion period of 1958-1963.

Twice since World War II, the industry successfully accomplished rapid re-equipping programs: first in 1945-46, and again in 1950-51. But neither was as drastic and costly as the 1958-63 jet conversion cycle. In that conversion the carriers contracted for large numbers of $6 million aircraft. Total investment in the trunkline industry in 1958 was $1.7 billion. By the end of 1962, the industry investment in new jet airliners alone exceeded $3 billion. In 1955-56, when the first round of jet orders were placed, the industry had been forced to rely primarily on debt financing. The industry's long-term debt to total capitalization ratio increased from 28 percent in 1955, to 56 percent in 1960, and to 66 percent in 1962.

Optimism prevailed in 1958 and early 1959 when the new jets were introduced in limited numbers. Then, just when the high-productivity jets were arriving in larger numbers, the growth rate in passenger traffic declined substantially. Earnings were suddenly depressed as traffic failed to grow and passenger carrying capacity increased. The industry passenger load factor—the percentage of available seat miles sold—dropped from 61.4 percent in 1959, to 56.2 percent in 1961.

The resulting financial problems led to increased competition

between the trunks for the available traffic. The seriousness of the industry's situation was manifest in two ways: (1) by the flurry of merger proposals submitted by several airlines as a method to survive the recession, and (2) by the chaotic schedule of passenger fares which led to confusion and criticism. In spite of its early endorsement of the merger approach, the Civil Aeronautics Board permitted only one merger during the jet transitional period—that being between United Airlines and the nearly bankrupt Capital Airlines.

How did the industry get itself into such a critical situation? Mr. Maurice Lethbridge of Eastern Airlines made this comment in 1961:[80]

> For the past twelve years the airline industry has done a very creditable job. It has multiplied fourfold temporarily, and I am sincere in saying that temporarily we are going through a dry period in which we find ourselves with over competition and over supply.
>
> There is no need of wasting time trying to find out how we got where we are. We all had a hand in it. Some people like to blame the CAB. We don't think that is the case. We in the industry are as responsible for today's problems as the CAB or the Government or any other Government bureau.
>
> We, in the late 1950's, had eyes bigger than our stomachs, and already one person, one industry, one airline, has died with a good big stomach ache. It's gone. Another one is very shaky, and there are others that are slipping, nervously.
>
> Never before in the history of our business have we needed more cooperation and understanding between the governmental agencies and our own industry.

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[80]"The Issues and Challenges of Air Transportation," Symposium, 1961, p. 14.

> The problem of over competition is something for which we are going to have to turn to the CAB for solution. The problem of over supply and production is our own baby, and we have got to find ways out of it.

What did the jet conversion cost the industry and its owners in lost earnings? Assuming the 10½ percent rate of return on invested capital established by the CAB is a valid estimate of what the airline industry needs to earn in order to attract investors, an earnings deficiency may be approximated. During the years 1956 through 1962, an earnings deficiency of approximately $550 million is calculated in Table 16.

Table 16. Estimated earnings deficiency of the domestic trunkline operations 1956-1962.[81]

Year	Total investment*	Desired return**	Actual return	Earnings deficiency
		($000 Omitted)		
1956	$ 711,159	$ 74,672	$68,271	$ 6,401
1957	903,668	94,885	43,376	51,509
1958	1,066,858	112,020	69,346	42,674
1959	1,320,673	138,671	93,768	44,903
1960	1,579,640	165,862	44,230	121,632
1961	1,838,263	193,018	27,574	165,444
1962	1,938,118	203,502	85,277	118,225
	Total Deficiency 1956-1962			$550,788

*Stockholder equity plus long-term debt.
**CAB recommended 10.5 percent.

[81] CAB Handbook of Airline Statistics, op. cit., and Air Transportation 1963, op. cit.

The Industry Today

While the Jet Age brought greatly improved public transportation service to American commerce, the postal service, and to national defense, it did not, until 1963, begin to bring financial success for the domestic trunk airline industry. During the first half of 1963 only three airlines lost money—Eastern, Northeast, and TWA.[82] The airlines are still heavily in debt with a debt/equity financing ratio of 60 percent/40 percent, but the steep rise in interest and depreciation expense has leveled off to a very slow rate of change (refer to Fig. 1).[83]

Initial industry passenger traffic forecasts for 1963 estimated a growth of 5-7 percent in passenger revenue miles over 1962 traffic. Actual growth in passenger revenue miles neared 13 percent, as presented in Table 17.

Table 17. Increase of 1963 domestic trunk traffic over 1962.[84]

	1963 traffic	Percent increase over 1962 traffic
	(000 omitted)	
Number of passengers	51,996	11.2%
Revenue passenger miles	35,965,459	13.0%
Freight ton miles	521,350	10.0%
Express ton miles	65,463	0.9%
U. S. mail ton miles	167,160	4.3%
Total revenue ton miles	4,220,259	11.9%

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[82]"Airlines Pull Over the Hump," Business Week, September 7, 1963, p. 133.

[83]"Airlines Attain Maturity," op. cit., p. 5.

[84]"Airlines See Across-The-Board Growth," American Aviation, January, 1964, 27:42.

Two factors brightened the financial picture for the jet operating airlines: (1) the improvement in the national economic picture; and (2) the exceptionally high productivity of the jets. United Air Lines' Curtis Barkes, Vice President for Finance and Property, said, "the upturn in the general economy and the quickened tempo of business activity...resulted in a large volume of air travel."[85] But more significantly, the jet-powered aircraft itself, with its high degree of operating reliability, productivity, and efficiency, enabled most operators to develop break-even load factors in the 40-50 percent range—significantly below the 1963 industry average passenger load factor of 54 percent.

Current earnings are less than satisfactory (on the basis of the CAB desired rate), and financial prosperity is not uniform among the carriers. But on the basis of 1963 operations, most domestic trunks made a successful financial recovery and transition into the jet age.

A bright spot in the industry's future is that it now has the seating capacity to handle the projected passenger growth up to the 1970's without further major equipment expenditures. Capital needs for possible further expansion of air freight and for smaller passenger jets will continue, but these requirements should not be as large as the investment at the beginning of the jet age. Domestic trunklines ordered 194 jet transports for delivery in 1964 and 1965—an increase of 55 percent over the 354 jets in domestic trunkline operation at the end of 1963. Some of

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[85]William V. Henzey, "Trunks Zoom Towards Top Earnings," American Aviation, September, 1963, 27:23.

these jets will replace propeller equipment that accounted for 17.5 percent of the domestic air route passenger miles flown in 1963.[86]

David W. Bluestone, chief of CAB's Planning Office, stated that "a relatively long-term favorable profit" probably is ahead for the airline industry, but "it may not reach the desired goal of 10.5 percent return on investment.[87]

Ralph L. Wiser, CAB Hearing Examiner in the American-Eastern merger proposal, commented in 1963 about the industry's health:[88]

> The consensus of most carriers is reasonable in concluding that the air transport industry has passed the more critical points in the present crisis, which was due primarily to jet re-equipment problems and the failure of traffic to grow as expected, and is again on the way to successful earning positions.

A few skeptics paint a less rosy picture concerning the industry's current health. George Hitchings, American Airline's Chief Economist, stated that "profits are still not adequate," and pointed to the industry's thin profit margin (2 percent after taxes) and low return on invested capital (3.5 percent).[89]

Continuing problems are (1) excessive competition and (2) pricing. The CAB is actively pursuing a policy of creating competition on routes where it is felt necessary. For example,

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[86]"Passenger-Mile Revenue Declines," Aviation Week and Space Technology, June 15, 1964, p. 40.

[87]"Long-Term Airline Prospects Seem Bright," Aviation Week and Space Technology, November 16, 1964, p. 39.

[88]American-Eastern Merger Case, op. cit., p. 32.

[89]"Airlines," Forbes, January 1, 1964, p. 29.

recent action created competition for United on four important routes by authorizing American and Northwest to operate on the same routes. United had operated on these routes without competition since the United-Capital merger in 1961.[90] Mr. Robert Hotz, Editor of Aviation Week and Space Technology, stated that "pricing continues to be vexatious, although the dimensions of this problem have diminished and it no longer presents the economic knife-edge balancing act between success and disaster that it did a few years ago.[91]

A new generation of top management is moving into the airline industry. Six of the eleven domestic trunks now or soon will have new presidents, but it is doubtful that they will find time to relax in spite of the airlines' technical achievements and now profitable jet operations. Mr. Doty, Transport Editor of Aviation Week and Space Technology, believes that the following are but a few of the many problems facing the entire industry and new managements:[92]

> Foremost is the need to attain a financial stability that will protect a stockholder's investment and insure him an adequate return on that investment. This requires new techniques to expand the consumer market and a long-range fiscal planning program that will provide the assets and capital resources which are necessary to exploit an enlarged market.

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[90]"Competition on 4 Runs of United Air Lines is Ordered by CAB," Wall Street Journal, August 5, 1964.

[91]Robert Hotz, "Airline Outlook," Aviation Week, June 8, 1964, p. 11.

[92]Doty, op. cit., p. 161.

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THE AIRLINE INDUSTRY'S TRANSITION TO JET AIRCRAFT, 1958-1963: THE FINANCIAL ASPECTS

by

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AN ABSTRACT OF A MASTER'S REPORT

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This report is concerned with an examination of the primary economic problems experienced by the American scheduled airline industry during the jet conversion period of 1958 to 1963 and an analysis of the financial effects of these problems.

The approach was to determine what factors caused the industry recession during the 1958-1963 jet conversion period; what major industry problems developed; and the approximate financial loss to the owners of the airlines involved.

Twice since World War II, the industry successfully accomplished rapid re-equipping programs: first in 1945-46 and again in 1950-51. But neither was as drastic and costly as the 1958-1963 jet conversion cycle. In that conversion the carriers contracted for large numbers of $6 million aircraft. Total investment in the trunkline industry in 1958 was $1.7 billion. By the end of 1962, the industry investment in new jet airliners alone exceeded $3 billion. In 1955-56 when the first round of jet orders was placed, the industry had been forced to rely primarily on debt financing. The industry's long-term debt to total capitalization ratio increased from 28 percent in 1955, to 56 percent in 1960, and to 66 percent in 1962.

Optimism prevailed in 1958 and early 1959 when the new jets were introduced in limited numbers. Then, just when the high-productivity jets were arriving in larger numbers, the growth rate in passenger traffic declined substantially. Earnings were suddenly depressed as traffic failed to grow and passenger carrying capacity increased. The industry passenger load factor—the percentage of available seat miles sold—dropped from 61.4

percent in 1959 to 56.2 percent in 1961.

The resulting financial problems led to increased competition between the trunks for the available traffic. The seriousness of the industry's situation was manifest in two ways: (1) by the flurry of merger proposals submitted by several airlines as a method to survive the recession, and (2) by the chaotic schedule of passenger fares which led to confusion and criticism. In spite of its early endorsement of the merger approach, the Civil Aeronautics Board permitted only one merger during the jet transitional period—that being between United Airlines and the nearly bankrupt Capital Airlines.

In late 1962 and early 1963, passenger traffic resumed a favorable growth rate, airline revenues increased, the jets proved to be even more productive and proficient costwise than expected, and airlines found they could operate profitably even with the continued comparatively low passenger load factors.

This short but serious recession cost the owners of the airlines over $500 million in lost earnings. Current earnings are less than satisfactory, and financial prosperity is not uniform among the carriers. But on the basis of 1963 operations, most airlines made a successful financial recovery and transition into the jet age.